

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A microstructure, comprising:  
a first finger including a length, a first surface and a second surface, said first finger capable of being doped for supporting a voltage potential between said first and second surfaces; and  
a second finger including a first surface, said second finger capable of moving with respect to said first finger between said first and second surfaces of said first finger upon application of a voltage to said second finger,  
wherein said first surface of said first finger is coplanar with said first surface of said second finger in an unbiased position.
2. (Original) A microstructure as recited in claim 1, further comprising a first voltage source for supplying a voltage to said first surface of said first finger.
3. (Original) A microstructure as recited in claim 2, further comprising a second voltage source for supplying a voltage to said second surface of said first finger.
4. (Original) A microstructure as recited in claim 3, further comprising a third voltage source for supplying a voltage to said second finger.
5. (Original) A microstructure as recited in claim 4, wherein the magnitude of said voltage supplied by said third voltage source is significantly greater than said voltage supplied by said first and second voltage sources.
6. (Original) A microstructure as recited in claim 4, wherein the magnitude of said voltage supplied by said third voltage source is at least ten times greater than said voltage supplied by said first and second voltage sources.

7. (Original) A microstructure as recited in claim 4, wherein said microstructure effects a force transducer upon said first finger.

8. (Original) A microstructure as recited in claim 4, wherein said microstructure effects a force transducer upon said second finger.

9. (Original) A microstructure as recited in claim 1, said microstructure further comprising an output, said output connected to an opamp circuit having an output, wherein said opamp circuit output provides a signal representative of the relative position between said first and second fingers.

10. (Currently Amended) A microactuator formed on a substantially planar substrate capable generating an electrostatic force in a direction substantially perpendicular to said substrate, said microactuator comprising:

a stationary comb-finger including a top portion relatively distal from the substrate and a bottom portion relatively proximal to the substrate, said stationary comb-finger ~~capable of supporting a voltage potential between said top and bottom portions~~ being doped to provide a resistance of between 0.5 Ohm-cm and 250 Ohm-cm; and

a movable comb-finger capable of moving with respect to said stationary comb-finger between said top and bottom portions upon application of a voltage to said movable comb-finger;

the microactuator formed by the steps of:

(a) forming the stationary comb-finger by etching down through a top layer on the substrate, the top layer being the uppermost layer on the substrate; and

(b) forming the movable comb-finger adjacent to the stationary comb-finger formed in said step (a), the movable comb-finger formed by etching down through the top layer on the substrate, the top layer still being the uppermost layer on the substrate.

11. (Original) A microactuator as recited in claim 10, further comprising at least a first voltage source coupled between said top and bottom portions of said stationary finger, and a second voltage source coupled to said movable finger.

12. (Original) A microactuator as recited in claim 11, wherein the magnitude of said voltage supplied by said second voltage source is significantly greater than said voltage supplied by said at least first voltage source.

13. (Original) A microactuator as recited in claim 11, wherein said voltage supplied by said second voltage source is approximately 100 volts and said voltage supplied by said at least first voltage source is approximately 10 volts.

14. (Original) A comb-finger microactuator as recited in claim 10, a dimension of said stationary finger in a direction perpendicular to the substrate being greater than a dimension of said movable finger in a direction perpendicular to the substrate.

15. (Original) A microactuator as recited in claim 10, a dimension of said stationary finger in a direction perpendicular to the substrate being at least one and one-half times greater than a dimension of said movable finger in a direction perpendicular to the substrate.

16-26. (Withdrawn)

27. (Currently Amended) An assembly for an optical switching array micromachined in a substrate, the assembly comprising:

a mirror for reflecting a signal to one of at least a first and second positions;  
a spring member affixed to said mirror for flexibly anchoring said mirror over said substrate;  
a microactuator for moving said mirror between said at least first and second position, said microactuator including:

a stationary comb-finger having a top portion relatively distal from the substrate and a bottom portion relatively proximal to the substrate, said stationary comb-finger capable of being doped for supporting a voltage potential between said top and bottom portions; and  
a movable comb-finger attached to said mirror, said movable comb-finger and said mirror moving with respect to said substrate in a direction substantially perpendicular to said

substrate upon application of a voltage to said movable comb-finger and said stationary comb-finger

the microactuator formed by the steps of:

- (a) forming the stationary comb-finger by etching down through a top layer on the substrate, the top layer being the uppermost layer on the substrate; and
- (b) forming the movable comb-finger adjacent to the stationary comb-finger formed in said step (a), the movable comb-finger formed by etching down through the top layer on the substrate, the top layer still being the uppermost layer on the substrate.

28. (Canceled)

29. (Original) An assembly for an optical switching array as recited in claim 27, further including a second set of movable and stationary fingers wherein said second set of movable and stationary fingers are offset approximately 90° from the first set of movable and stationary fingers.